

**Listing of Claims**

1. (Previously Presented) A purified protein having  $\Delta^8$  fatty acid desaturase activity, and comprising an amino acid sequence selected from the group consisting of:
  - (a) an amino acid sequence as shown in SEQ ID NO: 4;
  - (b) an amino acid sequence that differs from that specified in (a) by one or more conservative amino acid substitutions; and
  - (c) an amino acid sequences having at least 95% sequence identity to the sequences specified in (a) or (b).
2. (Original) An isolated nucleic acid molecule encoding a protein according to claim 1.
3. (Previously Presented) The isolated nucleic acid molecule of claim 2, comprising a sequence as shown in SEQ ID NO: 3.
4. (Original) A recombinant nucleic acid molecule, comprising a control sequence operably linked to the nucleic acid sequence of claim 2.
5. (Original) A cell transformed with the recombinant nucleic acid molecule of claim 4.
6. (Previously Presented) A cell transformed with the recombinant nucleic acid molecule of claim 4 and a nucleic acid molecule that encodes a protein having  $\Delta^5$  fatty acid desaturase activity, selected from the group consisting of:
  - (a) a nucleic acid molecule as shown in SEQ ID NO: 1; and
  - (b) a nucleic acid molecule that has at least 95% sequence identity to the nucleic acid molecule shown in (a).
7. (Original) The cell of claim 5, wherein the cell is a plant cell.

8. (Previously Presented) An isolated nucleic acid molecule that:
  - (a) hybridizes under high-stringency conditions with a nucleic acid probe, the probe comprising a sequence as shown in SEQ ID NO: 3; and
  - (b) encodes a protein having  $\Delta^8$  fatty acid desaturase activity.
9. (Previously Presented) An isolated or recombinant  $\Delta^8$  fatty acid desaturase encoded by the nucleic acid molecule of claim 8.
10. (Original) A recombinant nucleic acid molecule, comprising a promoter sequence operably linked to the nucleic acid molecule of claim 8.
11. (Original) A cell transformed with the recombinant nucleic acid molecule of claim 10.
12. and 13. (Canceled)
14. (Previously Presented) An isolated nucleic acid molecule that:
  - (a) has at least 95% sequence identity with a nucleic acid sequence as shown in SEQ ID NO: 3; and
  - (b) encodes a protein having  $\Delta^8$  fatty acid desaturase activity.
15. through 27. (Canceled)
28. (Previously Presented) The isolated nucleic acid molecule of claim 8, wherein the nucleic acid molecule hybridizes under very high-stringency conditions with said nucleic acid probe.
29. (Previously Presented) An isolated or recombinant  $\Delta^8$  fatty acid desaturase encoded by the nucleic acid molecule of claim 28.

30. (Previously Presented) A recombinant nucleic acid molecule, comprising a promoter sequence operably linked to the nucleic acid molecule of claim 28.

31. (Previously Presented) A cell transformed with the recombinant nucleic acid molecule of claim 30.

32. (New) The cell of claim 31, wherein the cell is a plant cell.

33. (New) A recombinant nucleic acid molecule, comprising a control sequence operably linked to the nucleic acid sequence of claim 3.

34. (New) A cell transformed with the recombinant nucleic acid molecule of claim 33.

35. (New) A cell transformed with the recombinant nucleic acid molecule of claim 33 and a nucleic acid molecule that encodes a protein having  $\Delta^5$  fatty acid desaturase activity, selected from the group consisting of:

(a) a nucleic acid molecule as shown in SEQ ID NO: 1; and

(b) a nucleic acid molecule that has at least 95% sequence identity to the nucleic acid molecule shown in (a).

36. (New) The cell of claim 35, wherein the cell is a plant cell.

37. (New) The cell of claim 34, wherein the cell is a plant cell.

38. (New) The cell of claim 6, wherein the cell is a plant cell.

39. (New) A cell transformed with the recombinant nucleic acid molecule of claim 10 and a nucleic acid molecule that encodes a protein having  $\Delta^5$  fatty acid desaturase activity, selected from the group consisting of:

(a) a nucleic acid molecule as shown in SEQ ID NO: 1; and

(b) a nucleic acid molecule that has at least 95% sequence identity to the nucleic acid molecule shown in (a).

40. (New) The cell of claim 11, wherein the cell is a plant cell.
41. (New) The cell of claim 39, wherein the cell is a plant cell.